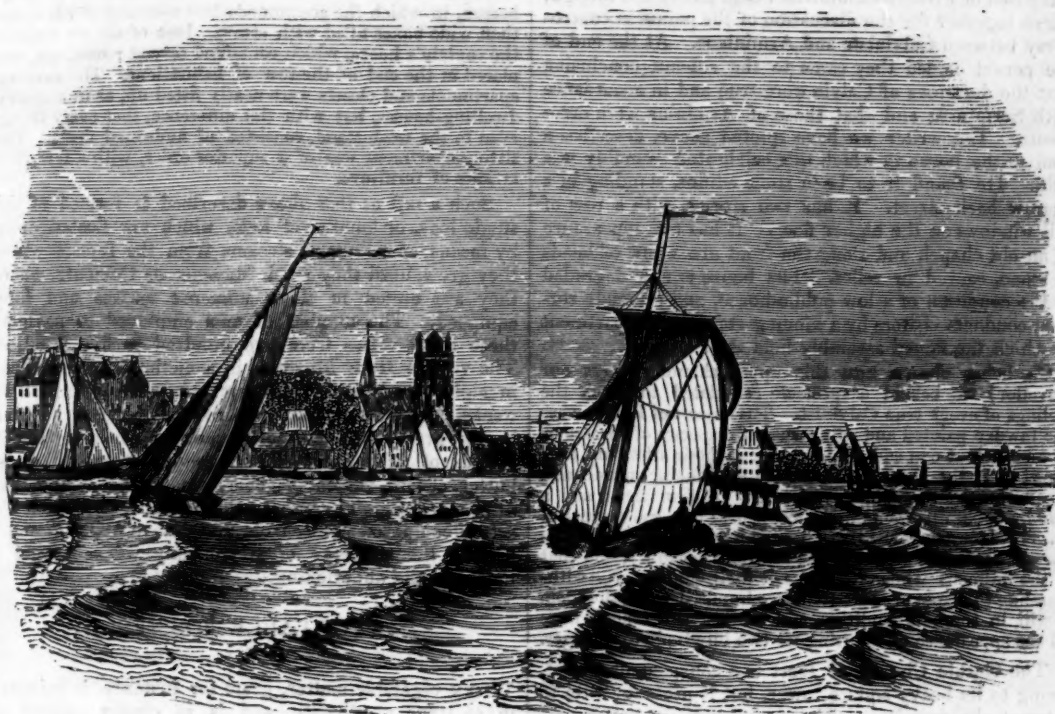




THE PORTS OF HOLLAND.



I. DORT.

THE great peculiarity of the towns of Holland arises from the superabundance of waters existing in that remarkable country, and the extensive tracts of land that lie under water, or are in the process of draining. Such is the wilderness of waters about the town of Dort that the traveller views the scene with involuntary apprehension, under the idea that the rising of a tide or flood in the Rhine, a foot or two beyond the present level, would involve the whole territory in ruin.

Dort is one of the most ancient cities in Holland, and in its present position on an island, made such by a terrible inundation, and saved from the general destruction which ravaged the country, presents an interesting spectacle. The dreadful catastrophe to which we allude, took place in 1421 and completely altered the face of the country, changing the course of the waters of the Rhine, and converting large tracts of land into mere marshes. This inundation is said to have covered seventy-two villages, and to have destroyed a hundred thousand inhabitants. Part of the land has been redeemed from the waters; but very much is still submerged, or exists as uninhabited islands. The island on which Dort stands is a considerable one, being fifteen miles in length by about seven in breadth. To show how sensible the inhabitants are of their dangerous position, and how careful they are to secure their island, by every means in their power, from the effects of any future breaking forth of the waters, we may name what appears almost incredible, that the boundary dykes, which they have raised in all directions throughout the island, are two hundred miles in extent. These dykes are broad enough

for roads or canals on their summits, and are well planted with trees and shrubs. Within the enclosures thus formed the inhabitants carry on the cultivation of flax as their principal article of produce, with the usual crops in a greater or less degree. Dort is the centre of the flax-traffic in that neighbourhood, and considerable exports are made to the British and Irish ports, much of the fine linen of Ireland being manufactured from the flax of this island.

The history of Dort goes back to, and is lost in a remote period of antiquity. Part of its ancient fame arises from its having been the gathering-place of parties who endeavoured to establish constitutional liberty. The Counts of Holland, (or *Hollow-land*) had their first abode there; and when the Seven Provinces were declared independent in 1572, it was here that the members of the States held their first meeting, and constituted William, Prince of Orange, Stadtholder, and sole Governor of the country.

These stirring scenes must have given to the city of Dort an air of great importance in former times; but of this there are few vestiges remaining. This is the account of it given by a recent traveller.

Situated with its quays on the deep water of the Maal, which is equal, if not superior to the Maas, both in breadth and depth, Dort is admirably adapted for being an entrepôt of traffic for the countries on the Upper Rhine. But there is a deadness in the general aspect of the place,—all is silent as if a Sabbath; and we are forcibly impressed with the conviction that the days of Dort's greatness are passed. The streets are lined with houses of a much more antique fashion than I had previously noticed. As usual the gables are turned outwards, and they rise with many grotesquely

ornamented windows and crow-steps to a considerable altitude, while the practice of painting the bricks a bright red, and the ornamental stones and cornices a light colour, adds to their fantastic appearance. A number of the houses, as appears from the dates carved on their exterior, were erected during the period of Spanish occupation, previous to 1672.

Much celebrity has accrued to the town of Dort from the circumstance of the famous synod of divines having been held here in 1618-19. During six months this assembly remained in deliberation on some important points of Christian doctrine. The Synod of Dort was composed of Protestant ministers both native and foreign, called together for the discussion of the points in controversy between Calvinists and Arminians. At the end of the period named they came to the solemn conclusion that the doctrines of Calvin were true and in accordance with Scripture; and that those of Arminius were erroneous. The writer we have quoted above, describes a visit to the house in which this celebrated assembly was held. He found it to be a stone edifice, standing in a narrow back street. It has two stories, with a row of tall windows on the higher floor. It has the appearance of an old chapel, and along the front are a row of heads in stone, carved in relief. The house is now degraded to the condition of a low public-house, and a female servant conducts visitors by a winding-stair to the apartment in which the famed assembly held their sittings.

On being shown into this upper chamber (says our traveller) we beheld a spectacle calculated to shock the feelings of every true Calvinist. The objects of horror were the tawdry painted and gilt scenes of a species of theatre or opera stuck at one end of the room; and our attendant confessed that the place was now used for dancing, music, and theatricals on the Sunday evenings. A few forms, and a shabby apparatus for lighting, confirmed this sad narration.It was impossible to avoid drawing a contrast between the character and aspect of the reverend assembly, and that of the buffoons who now make it their haunt. Notwithstanding the lapse of more than two hundred years, the room is still in the best condition, and the beams overhead have all the appearance of enduring for two hundred years longer.

The Gothic Church of Dort is a conspicuous object, owing to its heavy square tower, but it presents little to interest the traveller. The monuments are better preserved than in many other churches, owing to a device of the Dutch, during the occupancy of the country by the French. They concealed the monumental erections by a screen work of plaster, in order to save them from the general doom of defacement. A pulpit of white marble, of comparatively recent date, ornaments this church. It is most elegant in design, and elaborate in carving. The body of the pulpit from the floor to the cushion, including the door and the stair, is of very pure white marble, and the canopy overhead is of black oak, richly carved. Each side of the pulpit is sculptured to represent a scripture scene. On the door is the Ascension; on the front, the baptism of John; and on the other side, Christ preaching; while all the inferior parts are profusely covered with ornaments. In a small room within the porch is the communion plate, &c. of massive gold.

It is at Dort that the great timber rafts of the Rhine are brought to anchor and dismembered. A visit of the traveller above cited, to one of these rafts, is pleasantly told, and may give our readers a distinct idea of the arrangements adopted in floating down the timber to its place of destination.

This floating island (for it really deserves such a name) consisted of twelve lengths of long square logs of wood, each log measuring sixty feet, whereby the total length amounted to seven hundred and twenty feet. The breadth was a hundred and twenty feet, and was formed by lines of logs lying close to each other. The depth I could not ascertain by inspection, but was told that it consisted of several layers of logs, or was about six or seven feet. The whole were strongly bound together by means of chains and iron rivets, so as to preserve the mass entire during its lengthened navigation, and the upper stratum was laid with

rough deals to form an even floor or deck for the inhabitants. The mass was so sunk by its weight, that the water nearly reached the flooring. The most conspicuous thing about the raft was a line of houses or cottages formed of rough planks, running down the centre, like the side of a street in a village. On inquiry, we found that the whole of the navigators had left the raft a few days before; the only individual remaining was the cook or steward, and by this functionary we were politely shown over the establishment. First we entered the kitchen, a rude boarded house, hung round with culinary utensils, and having a cooking-place in the middle of the floor, formed of a wide and elevated mass of brick. Next we went through the common sleeping-houses, in which the accommodations consisted of little else than wide boxes filled with straw. Last of all we entered the captain's house, which contained several rooms, and was placed at the end of the row of habitations. The sleeping apartments and closets were neatly fitted up, as in ordinary dwelling-houses, but with the difference, that every thing, even to the wash-stand, consisted of undressed deals. The sitting apartment was of a superior order, with a few good articles of furniture.

Such a raft as that above described is formed of the single logs, or bundles of logs, which are floated down by means of tributary streams from the forests where they grow, until they reach Mayence or Coblenz, where they are united in these immense masses and fully equipped. The number of men employed to navigate these rafts varies from two hundred to five hundred. The voyage from Mayence is sometimes accomplished in eight days; but in bad weather it has occupied six weeks. The consumption, therefore, on board the raft is very great; it is not uncommon to consume 20,000 pounds of bread, and 10,000 pounds of meat, besides butter, cheese, vegetables, beer, wines, coffee, sugar, &c., in proportion. The value of the timber of which the raft is composed varies from 25,000*l.* to 33,000*l.* and is usually the property of a company whose capital is united in the undertaking.

VEGETABLE FOSSILS.

I.

WHEN vegetable matter, grass for instance, is collected in so large a quantity, and is so closely packed as, in a great degree, to keep out the atmospheric air from the internal parts of the mass, a considerable and peculiar change is effected: the vegetable matter soon loses its green, and acquires a brownish colour; its flavour and odour are changed, and heat is produced, terminating, unless air be freely admitted, in the mass taking fire. The vegetable matter, thus changed into *Hay*, acquires, among its other new properties, that of powerfully resisting any further change upon exposure to the atmosphere.

But should vegetable matter be thus collected in a situation in which *moisture* has almost constant access to it, a very different result ensues. Another process takes place, by which the vegetable matter, as the process goes on, loses its original form, and becomes a soft mass, of a dark colour and peculiar appearance; no traces of its former existence being discoverable, except in the accidental presence of some fragment of vegetable matter which may not have undergone a complete change. When dried, it forms a substance, of a reddish brown colour, which quickly absorbs, and tenaciously retains water, readily takes fire, and yields, whilst burning, a strong bituminous odour. This is the substance termed *peat*; immense accumulations of which are formed in various parts, favourable to the collection of water and the growth of the *sphagnum palustre*, a plant by the conversion of which the supply of this substance is chiefly supported. In the peat-bogs, or mosses, as the natural magazines of this substance are called, trunks of trees are often found imbedded, and partaking of the nature of the surrounding bituminous mass. This change is effected in different degrees: the deeper in the mass, and consequently the longer exposed to the process of bitu-

minization, the more perfect is the conversion. Some pieces are found to have nearly lost their woody appearance, their respective lines and markings having been molten down in different degrees during their bituminization; whilst others, in which the nature of the substance is also entirely altered, are found still to retain almost all their characteristic markings. This substance has long been known by the name of *bituminous wood*.

Wood of a very different character, called *moss fir*, is also frequently found in the peat mosses or bogs. It much resembles in its colour, and general external appearance, ordinary decayed fir-wood; but, on examination, it appears that the fibre of the wood is strongly imbued with resin, and that all its interstices are filled with resinous matter. It is so highly inflammable, as to be employed, by the poor of the districts in which it is found, not only as fuel, but as torches.

Subterranean collections of bituminized wood and other vegetable matter, are found at various depths in different parts of the world. The substance thus formed is generally a compact, light, glossy, combustible material; of a dark brown colour, and frequently almost black; splitting longitudinally into plates of various thicknesses, breaking transversely with an imperfect shelly fracture, with a shining resinous lustre, and sometimes yielding the appearance of the markings of wood. This is the *Suturbrand* of Iceland, and the *Bovey coal* of this country.

The fossil wood, now described, may be said to pass into *Jet*, which is found, especially in the neighbourhood of Whitby, in Yorkshire, in a state very nearly approaching to that of Bovey Coal. It exists in plates, generally from half an inch to about an inch in thickness, is very light, soft, rather brittle, shining, resinous, and of a velvet black colour. *Cannel coal*, of which some of the finest specimens are found in Lancashire, differs from jet, chiefly, perhaps, in its holding a greater portion of earth in intimate mixture with it. It never manifests internally any traces of vegetable structure, but sometimes bears on its surface evident marks of impressions formed on it whilst in a soft state.

Common coal is composed of a similar bituminous matter, divided by films of calcareous spar, intersecting each other nearly at right angles: its fracture is thus rendered small-grained and uneven, and its fragments mostly cubical or trapezoidal, that is, having unequal sides and angles. Combustion is thus rendered more slow by the enclosure of the coal with envelopes of white calcareous spar, while the size and figure of the fragments are admirably adapted for the convenience of fuel.

The vegetable origin of *naphtha*, *petroleum*, and *asphaltum*, is not yet positively ascertained. *Amber*, from its being found generally in beds of fossil wood, may owe its origin to the changes effected in vegetable matter during its under-ground deposition, or may be vegetable resins, the original product of the trees which they accompany.

Parts of various flowerless plants, together with the remains of many other unknown vegetables, are found in the ironstone which occurs in nodules among the strata of the coal formation. These nodules consist of a carbonate of iron mixed with clay. On being broken, the preserved remains are generally discovered on each of the broken sides of the nodule; not, as might be expected, displaying different sides of the vegetable, but the same side of the leaf, for instance, on each broken surface; in one, *in alto*,—in the other, *in basso relievo*. The explanation of this curious circumstance is found in the vegetable matter, during its passing through the bituminous change, having become softened, and having filled its own mould with its melted and subsequently hardened substance; the nodule, on being broken, showing on one side the surface of the bituminous cast, and, on the other, the corresponding mould.

In the bituminous and clayey slate forming the roofs

and floors of coal-mines, are vast collections of the black bituminized remains of grasses, reeds, and numerous other plants. These agree in their general characters with those of fleshy and juicy vegetables, but differ from living European species by their vast magnitude, and by the richness of the ornamental markings which appear on their trunks.

Descriptions cannot succeed in an attempt to give an idea of the beauty and varieties of the figures which are displayed on the surface of many of these fossils, and which have been supposed to owe their markings to the bark of different trees. Some are ornamented by regularly disposed straight plain ribs, arranged lengthways, or across, over their whole surface. Some by the crossing of nearly straight lines obliquely disposed, and many by the alternate contact and receding of gently wavy lines, forming surfaces regularly, but most singularly varying in their figures, and having in their centres, points, and depressions, from which spines have, in all probability, proceeded. In others, lines obliquely disposed intersect each other at angles, varying in their acuteness in different specimens, in, it would seem, an almost endless variety, forming surfaces apparently covered with scales that overlap each other.

These remains, in common with all others when found in slate, are almost always in a flattened state, from which some deception has arisen with respect to their original forms. But the examination of the vegetable fossils contained in the accompanying beds of limestone and sandstone, where compression has not taken place, yields the important information that these vast substances, which had been hitherto considered as fossil trees, are the remains of similar vegetables which have been found in the beds of slate, but there existing in their original forms, and agreeing in their size with those fleshy and juicy plants which are known to be now growing within the tropics.

The size which these fossil plants have attained, compared with that of the cactuses known in Europe, must lead to a doubt as to their agreement with the recent cactus. But to be enabled to form a correct judgment on this point, it is necessary to know the state in which these plants exist where the soil and climate are such as to allow them to develop themselves in their native luxuriance. The researches of the celebrated Humboldt, in the equinoctial regions of America, supply us on this head with the most appropriate and satisfactory information. The following detached observations of that philosopher will show not only the size to which these plants may arrive, but the vast tracts which, under favourable circumstances, they may overrun.

The hill of calcareous breccia (a rock composed of angular fragments cemented by lime) is covered with a thick forest of columnar cactus and opuntia (Indian fig) some thirty or forty feet high, covered with lichens, and divided into several branches in the form of candelabras, wearing a singular appearance. Near Maniquarez, at Punta Araya, we measured a cactus, the trunk of which was four feet nine inches in circumference. Cumana, Coro, the island of Margareta, and Curacao, are the places in South America that abound most in the plants of this family. A kind of bamboo, called by the Indians jagua, is found near San Fernando, growing to a height of more than forty feet. These cannot but remind the admirer of fossils of the vast fossil bamboos which are found in the sandstones accompanying coal. It is not in general by mosses and lichens that vegetation in the countries near the tropics begins. In the Canary Islands, as well as in Guinea, and in the rocky coasts of Peru, the first vegetables that prepare the mould for others are the succulent or juicy plants.

This general outline of bituminized fossils has been abridged from PARKINSON'S *Organic Fossil Remains*. In an early number of the Magazine, the subject will be concluded by a description of vegetable fossils that have assumed an earthy or metallic nature.

EASY LESSONS IN CHESS.

XVIII.

THE present Lesson will introduce the young Student to the ALLGAIER GAMBIT, a variety of the King's Gambit, invented, or introduced into general notice, by a German writer of the name of Allgaier. It is a striking opening, and, as in most Gambits, a slight mistake on the part of the second player is likely to ruin his game. If, however, it be properly opposed, the formidable attack prepared by the first player falls into the hands of the second. In our illustrations of this opening we select two games, the first of which is won by White and the second by Black.

WHITE.

1. K. P. two squares.
2. K. B. P. two squares.
3. K. Kt. to K. B. third square.
4. K. R. P. two squares.

BLACK.

1. K. P. two squares.
2. P. takes P.
3. K. Kt. P. two squares.
4. K. Kt. P. one square.

Thus far the moves are the same as in the last two Lessons: the variation commences at your fifth move: instead of playing the K. Kt. to K. fifth square as before, you now play him to K. Kt. fifth square, in which position he can be won by Black, on giving up two pawns. These two pawns are thought to be an equivalent for the Knight, in consequence of the attacking position which you acquire by this preliminary skirmish.

5. K. Kt. to K. Kt. fifth square.
6. K. R. P. one square.

For Black's fifth move some players prefer Q. P. two squares, by which his K. Kt. P. is defended, threatening to win the K. Kt. at the next move without losing K. Kt. P. We do not pretend to decide upon the merits of these moves, either of which leads to a good game. By moving K. R. P. one, your Kt. is at once forced, and provided Black can maintain his ground and bring out his pieces, his force will be superior to yours. Were he to move K. B. P. instead of the R. P. you would take his K. Kt. P. with your Q. and soon acquire a winning position, as has been already illustrated in previous Lessons where Black at a similar point moves K. B. P. one square.

6. Kt. takes K. B. P.

6. K. takes Kt.

By taking this pawn you force his K. to move into an exposed position.

7. Q. takes K. Kt. P.
8. Q. takes Gambit P.

7. K. Kt. to K. B. third square.

You thus get three pawns in exchange for your Kt. It is not uncommon for Black to play at his seventh move the Q. instead of the Kt. to K. B. third square, in order to protect the Gambit Pawn; but this position of his Q. is rather hazardous, on account of your K. R. which comes into play presently.

8. Q. P. one square.

The object being to prevent the advance of your K. P. upon his Kt. as also to liberate Q. B.

9. Q. P. two squares.
9. K. to K. Kt. second square.

By advancing your Q. P. you are able to attack his Kt. with your K. P., he therefore moves his K. in order to liberate the Kt.

10. K. B. to Q. B. fourth square.
10. Q. to K. square.
11. Castles.

You leave K. P. *en prise*: because if he take it with his Q. you capture his K. Kt. checking, and if he take it with his K. Kt. you play K. R. to K. square, and win the piece.

11. K. B. to K. second square.

In order to defend his K. Kt. from the attack of your Q. and R.

12. K. P. one square.
12. P. takes P.
13. P. takes P.
13. K. B. checks.

The chief use of this check is to enable him to make room for his pieces. It is thus that a good player gains what is technically called *time* over his adversary; that

is, he improves his own game while he forces his opponent to make useless moves.

14. K. to K. R. square.
14. K. Kt. to K. Kt. fifth square.
15. Q. Kt. to Q. B. third square.
15. Q. B. to K. third square.
16. Q. Kt. to K. fourth square.

This is a good move and decides the game in your favour. A variety of moves spring from it, and the Student will do well to examine them all.

17. Q. takes Kt. checking.
17. Q. to K. Kt. third square.
18. Q. takes Q. checking.
18. K. takes Q.
19. K. R. to K. B. sixth sq. chg.
19. K. to K. Kt. second square.
20. Kt. takes K. B.

The precision with which White wins a piece is worth your especial notice. You cannot acquire a more useful Chess habit than the long-sightedness of which this is an example.

21. Kt. to K. sixth square chg.
20. Q. Kt. to Q. B. third square.

Your passed pawn at K. fifth square is very valuable, and must, if possible, be preserved: but you have an opportunity of playing your Kt. to advantage; for if he do not take it you capture his Q. B. P. and threaten Q. R; and if he do take it you retake with R. and hereby defend the P.

22. R. takes B.
21. B. takes Kt.
22. Q. R. to K. square.

If you take his Q. R. with your R. he retakes with K. R. and wins the passed pawn, therefore White cleverly plays,

23. Q. B. takes K. R. P. chg.

If he take the B. with his K. R. you win the exchange; therefore

24. K. R. to K. B. sixth sq. chg.
24. K. to K. second square.
25. B. to K. Kt. fifth square.
25. Kt. takes P.

Although he has won the pawn yet he has gained no advantage, you have a dangerous check by discovery in store, and can decide the game in a very few moves.

26. R. to K. R. sixth sq. chg.
26. K. to K. B. second square.
27. Q. R. to K. B. sq. chg.
27. K. to K. Kt. second square.
28. R. takes R.
28. K. takes R.
29. Q. B. to K. B. sixth sq. chg.
29. K. to K. Kt. square.
30. R. to K. square.

By this move you win either the Kt. or the R., and then with the advantage of a piece and two pawns you must easily win.

The object of the following game (in which Black has the move) is to furnish a form of defence to the Allgaier Gambit originally suggested by Horny, a German writer, and given by Mr. Walker in the third edition of his *Treatise on Chess*. It is very ingenious, and when properly played seems to be effectual in destroying the attack of the first player

1. K. P. two squares.
1. K. P. two squares.
2. K. B. P. two squares.
2. P. takes P.
3. K. Kt. to K. B. third square.
3. K. Kt. P. two squares.
4. K. R. P. two squares.
4. K. Kt. P. one square.
5. K. Kt. to K. Kt. fifth square.
5. K. R. P. one square.
6. K. Kt. takes K. B. P.
6. K. takes Kt.
7. Q. takes K. Kt. P.
7. K. Kt. to K. B. third square.
8. Q. takes Gambit P.

Thus far the moves are the same as before: the peculiar defence above referred to commences with

8. K. B. to Q. third square.

Having won a piece this move seems to be advantageous, although it does, for a time, block up Q. B. and Q. P.; but it liberates K. R., and allows a safe retreat for your King. Black loses time, during which you get out your pieces on the Queen's side. Should he be so imprudent as to play the obvious move K. P. one square, you take it with B. and on his retaking with Q. play K. R. to K. square winning the Q.

9. K. B. to Q. B. fourth sq. chg.
9. K. to K. Kt. second square.

In this position of your K. Black has no further check, and the Q. no move on the K. Kt's file.

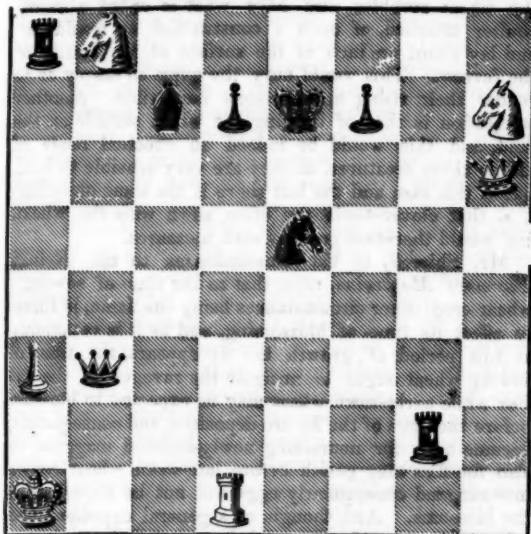
10. Q. to K. B. third square.
10. Q. Kt. to Q. B. third square.

By this move you prevent him from playing his K. P. one square, or his Q. P. two squares. You have now much the better game; the attack is transferred from him to you, and you have gained a piece in exchange for two pawns.

The two following problems are by M. D'Orville, of Antwerp, a gentleman celebrated for the inventive skill and ingenuity with which he handles this department of Chess study.

PROBLEM XIX.—White to move, and to give check-mate on the fourth move.

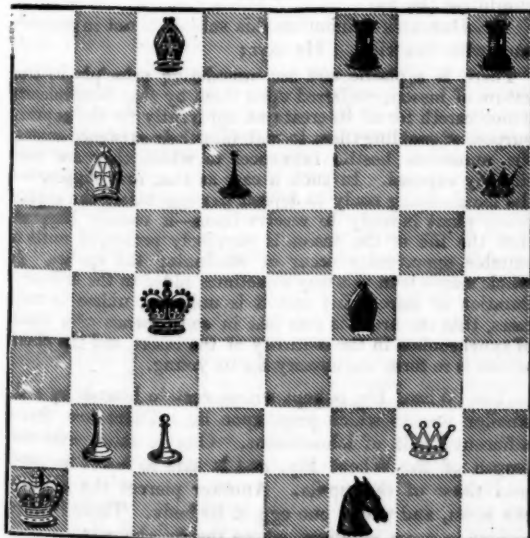
BLACK.



WHITE.

PROBLEM XX.—White to move, and to mate on the fourth move.

BLACK.



WHITE.

Most men speak when they do not know how to be silent. He is wise who knows when to hold his peace. Must we then be dumb? No; for there is a time to speak, and a time to be silent. And if we must give an account of every idle word, take care lest you have to answer also for idle silence. Nevertheless, tie your tongue, lest it be wanton and luxuriant: keep it within the banks: a rapidly-flowing river soon collects mud.—AMBROSE of Milan.

ON INSECTS WHICH ARE INJURIOUS TO THE FARMER.



VII. THE WHEAT FLY,

Tipula tritici, (Kirby), *Cecidomyia tritici*, (Latreille.)

Few persons are unacquainted with Crane Flies, commonly known by such names as *long-legs*, *tailors*, &c. There are, at least, forty species of this insect found in England, and several of the larger kinds are so very common that they can scarcely have escaped notice. The unusual length of the legs is sure to attract attention, especially as these insects frequently enter houses and settle on the windows. But it is not of the larger species that we have here to speak: one of the smaller members of the family has of late years attracted much attention by the depredations it commits on our wheat-crops. This minute insect is not much more than the twelfth part of an inch in length, and resembles a small gnat or midge. It was first pointed out to naturalists and agriculturists in the year 1795, by Marsham, treasurer to the Linnæan Society, who prevailed on Mr. Kirby and others to make it a diligent object of study. These scientific inquiries, together with the valuable aid of practical agriculturists, led to a good acquaintance with the natural history of the *Wheat Fly*, by which name this minute species of Crane Fly is now always understood.

In the beginning of June, or at that period when the wheat is just coming into ear, this fly begins to make its appearance in the fields. From its extreme minuteness, it is very apt to escape the observation of the farmer. The body is orange-yellow; the wings are clear, perfectly transparent, and hairy at the edges; the eyes are black; the legs are rather long compared with the size of the insect. On a calm summer's evening, a cloud of these little flies may be noticed hovering over the wheat. Mr. Kirby says that he seldom saw them before seven o'clock, but at eight the fields began to swarm with them, and they were all seen busily engaged in laying their eggs, at which time they were so engrossed by their occupation as not to be easily disturbed, so that a magnifying glass could be held quite close to an insect, without interrupting her proceedings. Sometimes as many as thirty-five insects were seen at the same time upon one ear. They placed themselves in the most convenient position for depositing their eggs in the blossom they meant to pierce, and Mr. Kirby succeeded in gathering a ear of wheat without disturbing the insects, and watching in the light of a sunbeam one of them engaged in the operation of depositing the eggs. It was full ten minutes before the little animal disengaged herself, and then it seemed to be on account of some disturbance of the ear on which she was at work. The eggs are furnished with a coating of glutinous matter, and adhere firmly to the glumes in small clusters, varying from two to upwards of twenty. They are oblong, transparent, and of a pale buff colour. In about a fortnight these eggs are hatched, and produce minute transparent maggots. The maggots begin to feed upon the pollen of the florets, and immediately acquire a yellow or saffron hue. By feeding on this essential portion of the blossom, which is destined for the fructification of the grain, it will be at once perceived

that where they exist in great numbers they must occasion serious loss. And this is too often the case: a healthy blade does not invariably produce a full ear; and when the crop becomes infested with this fly, the grain shrivels and decays as if suddenly deprived of nourishment, and the farmer's expectations are as suddenly disappointed. No fewer than forty-seven of these maggots have been counted upon one floret, so that these creatures, so insignificant in size, become formidable on account of their numbers.

Mr. Shirreff, an intelligent farmer of East Lothian, transmitted to the Linnean Society an interesting account of the proceedings of this insect as observed by him. He found that these flies frequented the thick-rooted couch-grass, as well as the wheat plant. They generally reposed on the lower part of the stems during the day, and became active about sunset, except when the wind was high. He occasionally saw them flying about on cloudy mornings till seven o'clock; and upon one occasion he saw them depositing their eggs in a shady situation at two in the afternoon. They are, however, most active when the sun is below or near the horizon, and they prefer the most umbrageous parts of the crop. Mr. Shirreff noticed that the flies almost invariably preferred the ears of wheat before they were fully exposed to the light, to those which were farther advanced; and as one side only of the ear is exposed at this early period, the other side frequently escaped injury, the maggots having no power of removing from one floret to another. The fly was found longest on spring-sown corn, and seemed to feed on the gum adhering to the newly emerged ears, but it deserted the crop as it approached maturity. Polish wheat seems less liable than some other kinds to the attacks of this fly, and some agriculturists state that the variety known as Cone wheat enjoys the same advantage.

At the end of July, or the beginning of August, the maggots are nearly all full grown. They have no feet, but are wrinkled or warty at their side edges. The head terminates in a point, and the posterior end is truncated. The animals have now assumed a deep citron colour. They leave the ear, and find their way into the ground, where they burrow to the depth of an inch, or sometimes less. There they change into the chrysalis or pupæ form, and pass the winter uninjured by the severest frosts. Some appear to lodge about the roots of the stubble, while a few find refuge in the hollow of the straw.

We do not adduce the Wheat Fly as an insect universally and extensively injurious, but it seems certain that, in some part or other of the country, it is annually productive of loss to the farmer, while in particular years it makes its appearance more generally, and is noticed as extremely injurious.

Three years after the attention of naturalists had been first directed to it by Marsham, this fly prevailed to an unusual extent. Again in 1808 there was a complaint of the attacks of yellow maggots (the larvæ of this fly) in Northumberland, Perthshire, Berwickshire, &c., and in different seasons up to the year 1827 it attracted more or less attention. In 1829, the loss in some parts of Perthshire varied from 8 to 20 bushels per acre, and in 1830, the ravages of the insect were very generally diffused. This being the case, the next question to be considered is the remedy for the evil. But here we must use Mr. Kirby's words.

The agriculturist perhaps will ask upon the present occasion, can you inform us how we may prevent or diminish the ravages of these insects? In reply to this, I would observe, that the first step towards curing a disorder is to find out the cause. In the present instance, this is the business of the naturalist, and this is done. By a set of experiments, first made upon a small scale, he may possibly find out some method that will prevent this insect laying its eggs in his wheat: these should commence as soon as the ear begins to quit the *folium vaginans* or hose, and they

ought to be continued till the germen is impregnated, or to use the rural phrase, the wheat is off the blossom. Perhaps fumigations of tobacco or sulphur, if made when the wind is favourable, might render the ear disagreeable to this insect. Much of the injury which this fly does in years peculiarly favourable to its increase, it is possible, by some such means might be prevented; yet it is not certain that the total annihilation of it would be ultimately beneficial. But be it granted that our labours lead the way to no discovery of this kind, may it be said that we have been idly busy, or unprofitably laborious when we have succeeded in developing some of the most curious mysteries of nature, and, in laying open the history of some of those secondary causes, which, guided by the hand of Providence, produce scarcity as the one or the other preponderate.

Another plan, suggested by Mr. Gorrie, is to plough the wheat stubbles, and have what is called a skim-coulter attached, of such a construction as would cut and lay about an inch of the surface at the bottom of the furrow. This would bury the pupæ so deeply as to render their rising again almost impossible. Another suggestion is that of burning the wheat stubble on the land, and this would be indeed an effectual mode of killing these creatures, as they are very sensible to heat, but in this case and the last there is the same objection, *i. e.* that clover-seeds are often sown with the wheat, and would therefore prevent such measures.

Mr. Shirreff, in his communication to the *British Farmers' Magazine*, says, that as the time of sowing a wheat crop, other circumstances being the same, is found to affect its time of blossoming, and as it is commonly at this period of growth the fly appears, the time of sowing wheat ought to mitigate the ravages of the fly. For while early-sown wheat may be expected to blossom before the eggs of the fly are deposited, and consequently become unfit for nourishing newly-hatched maggots, so also the flies may perish before late-sown wheat comes into ear, and consequently eggs will not be deposited in the blossoms. And though, as a general expedient, the sole cultivation of early and late sown wheats is not recommended, on account of the injuries such crops are liable to, from atmospheric changes, yet in particular circumstances, the abstaining from wheat cultivation for a season, in districts infected by the fly, might possibly annihilate the foe.

Mr. Duncan's opinion on this subject is not in accordance with this view. He says:

There is a plastic and accommodating principle in the nature of insects, conferred upon them by that Benevolence which careth for all its creatures, apparently for the express purpose of enabling them to maintain their existence among the numerous hostile influences to which they are continually exposed. In such a case as that here supposed—the female being ready to deposit her eggs before the appropriate plant is ready to receive them—it usually happens that the life of the insect is purposely prolonged until a suitable opportunity occur of continuing the species. A whole season is in this way sometimes added to the ordinary duration of insect life; and it is unlikely, unless in rare cases, that the brood is ever lost in consequence of a want of synchronism in the maturity of the insect, and the plant which is to form the nursery for its young.

The Wheat Fly is kept within certain bounds by still smaller insects which prey upon it. There are three different kinds of ichneumons. One is about half the length of the Wheat Fly, and is said to insert its eggs into those of the tipula. Another pierces the skin of the larva, and places one egg in its body. These insects appear in great numbers, where the fly abounds.

The famous Hessian Fly is related to the Wheat Fly, and was supposed to have been introduced in straw by the Hessian troops during the American war; but it has been ascertained that its supposed appearance here, was altogether a mistake, the mischief ascribed to it having been done by another, and a very distinct fly.

LETTERS TO THE READER.

No. X.

MY DEAR READER,

The various tasks that engage the English female agriculturist have been briefly sketched at the foregoing pages (71 and 95); and I will now inquire into the effect which her employment has upon herself and family, as well as into the means that have been suggested to meet the preventible causes of her evils.

We have already seen that field-work is beneficial to her bodily health. It might, indeed, have been anticipated that "an occupation which cannot outstep the order of nature, which must close with the shutting in of the day—must usually be suspended in foul weather—must attract those who are engaged in it into the open air," could not be otherwise than wholesome. Besides, the means of the family are increased by the woman's earnings, and consequently some improvement generally takes place in the quantity and quality of their food.

There is much actual ignorance amongst female labourers. A great many women brought up to field-work, like other women of the same class, are unable to read or write. This is more particularly the case with those above thirty. They are further described as sadly destitute of knowledge in the arts of life, even of the most familiar household duties, such as needle-work, cooking, and other matters of private economy.

The evil effects of a wife's ignorance of the ordinary arts of home, upon the moral well-being of her husband and children, are common to every class of poor, I had almost said, to every rank in society. These evils have been admirably stated by a working manufacturer, Mr. Joseph Corbett, of whom a philanthropic nobleman declared in the senate-house that England might well be proud. Mr. Corbett's affecting statement is as follows:

Children during their childhood toil throughout the day, acquiring not the least domestic instruction to fit them for wives and mothers. I will name one instance; and this applies to the general condition of females doomed to, and brought up amongst shop-work. My mother worked in a manufactory from a very early age. She was clever and industrious. She was regarded as an excellent match for a working man. She was married early. She became the mother of eleven children: I am the eldest. To the best of her abilities she performed the important duties of a wife and mother. She was lamentably deficient in domestic knowledge; in that most important of all human instruction, how to make the home and the fire-side to possess a charm for her husband and children, she had never received one single lesson. She had children apace. As she recovered from her lying-in, so she went to work, the babe being brought to her at stated times to receive nourishment. As the family increased so anything like comfort disappeared altogether. The power to make home cheerful and comfortable was never given her. She knew not the value of cherishing in my father's mind a love of domestic objects. Not one moment's happiness did I ever see under my father's roof. All this dismal state of things I can distinctly trace to the entire and perfect absence of all training and instruction to my mother. He became intemperate, and his intemperance made her necessitous. She made many efforts to abstain from shop-work, but her pecuniary necessities forced her back into the shop. Her family was large, and every moment was required at home. I have known her, after the close of a hard day's work, sit up nearly all night for several nights together, washing and mending of clothes. My father could have no comfort here. These domestic obligations, which in a well-regulated house (even in that of a working man where there are prudence and good management,) would be done so as not to annoy the husband, to my father were a source of annoyance; and he, from an ignorant and mistaken notion, sought comfort in an ale-house.

My mother's ignorance of household duties; my father's consequent irritability and intemperance; the frightful poverty; the constant quarrelling; the pernicious example to my brothers and sisters; the bad effect upon the future conduct of my brothers; one and all of us being forced out

so young that our feeble earnings would produce only one shilling a week; cold and hunger, and the innumerable sufferings of my childhood, crowd upon my mind and overpower me. They keep alive a deep anxiety for the emancipation of the thousands of children who are in a similar state of horrible misery. My own experience tells me that the instruction of females in the work of a house, in teaching them to produce cheerfulness and comfort at the fireside, would prevent a great amount of misery and crime. There would be fewer drunken husbands and disobedient children. As a working man, within my own observation, female education is disgracefully neglected. I attach more importance to it than to anything else. They impart the first impressions to the young susceptible mind; they model the child from which is formed the future man.

These are golden words. This working man strikes home to the root of the evil, and draws forth the remedy out of his own heart. To fit woman for her station is undoubtedly the first step; to adapt home to the wants and moral decencies of humanity is likewise essential; to educate the children for the practical duties of future life, would complete the circle of improvement. With regard to the first step, it would be, of course, impossible to undo all the disadvantageous causes under which the grown-up cottage-matron struggles; but her condition may be ameliorated by private charities and attentions; her dwelling may be fitted, at least, to one's instinctive notions of natural delicacy, if not for bodily health; and if her children be blessed with such a practical Christian education, as shall develop their whole faculties for good habits and useful labours, the next generation would be more moral, more religious, and more loyal. For we must not forget that the wretched home that tempts a poor man to the beer-shop, drives him from what might be a temple of peace to the undoubted place of sedition, where strong drink inflames bad passions, and presumptuous and self-willed men hide their own sins by exaggerating those of others.

The want of domestic accommodations is almost universal; cottages have rarely more than two bed-rooms, and a vast number have but one. At Stourpaine, a village near Blandford, Dorsetshire, Mr. Austin found a family of eleven who had only one sleeping apartment ten feet square; the family consisted of father, mother, and nine children, whose ages ran from twenty years to four months. Their amount of weekly earnings in money (December, 1842,) were sixteen shillings and sixpence, besides which the father obtained a bushel of corn a week at a shilling below the market price; he had his fuel carted for him, and rented a quarter of an acre of garden ground. Here, then, were the means of health and comfort, had their cottage been adapted to the most ordinary wants. The neighbouring hovels are equally unfit for the rearing of human life. A "malignant typhus" broke out amongst them about two years ago, and spread through the village.

The evils occasioned by want of proper sleeping rooms, and other essentials to domestic comfort and propriety, are followed by moral as well as physical disease. All the care and watchings of pious and intelligent parents are sometimes ineffectual to overcome the early tendency to evil in their children. But deprive young people of this wise affection, cramp them together in rooms too narrow for the decencies of life, and "malignant typhus" will not be the worst contagion there. At page 102 of the last Volume of this Magazine you will find the conditions of a healthy home stated, and referred to the laws of nature on which they depend.

With respect to education, the saying of the indigent man, "We want bread, not books," implies truly enough that practical knowledge does not keep pace with abstract studies. The instruction communicated in girls' schools furnishes but a partial training for the special duties of life. The manual exercises, commonly confined to the use of the needle, however useful, involve no robust

labour, and disincite the scholar for any but dress-making, and the lighter kinds of domestic service. The same remark applies still more forcibly to boys.

Besides being well-grounded in sound Christian doctrine, "children should learn" (I quote from an appendix to *Minutes of the Committee of Council on Education*, 1840, 1841,) "something of the objects which surround them, beginning with the nearest and most familiar. All objects which can be presented to the sight or touch may be usefully employed as the means of instruction. Their own clothes may lead them to inquire into the different kinds of clothing, with all the processes by which wool, silk, and cotton, &c., &c., are brought into use. The little payments which they witness at home and at school, may lead the master to teach them the use of money, the value of various coins, and the simplest principles of trade. The school-hours and days of the week may lead them to notice whatever is most useful to them respecting the division of time, from moments to centuries. They may be made to learn the indications of the hands on the face of a clock, or of the shadow on a sun-dial, the chief phenomena of the four seasons, &c. Their school-room and the houses around them may suggest the uses of clay and stone, of wood and glass, and the various ways in which houses are constructed. They may be made to measure their school-room, their desks, their play-ground, learn something of distances, and then they may proceed to measure planes and solids."

It is further advised that children should be taught to observe the different natural objects of their neighbourhood. The bread and vegetables which they eat may lead to an enumeration of the vegetable products of the county, the processes of husbandry, the difference of soils, the use of sunshine and shower, &c. A thousand objects around them, chairs, tables, beds, clothes, and carpets, should be made stepping-stones to a knowledge of capital, machinery, and labour. The question how their home is supplied with this food and furniture entails a lesson upon roads, canals, and railroads. Their attention should be turned to cottage economy; especially how they may economise, first, in the purchase of fuel, food, and dress; and secondly, in their use. They should also be taught how costly sickness is; how it destroys the enjoyment of life, and that cleanliness, temperance, good food, good air, and adequate exercise, are requisite for the preservation of health. When any number of children in a school are likely to become domestic servants, they should be enabled to learn the duties of that employment in detail.

The narrow walls of ordinary schools, the close playground, the poverty of school-furniture, at present prevent, for the most part, the practical application of this knowledge. But INDUSTRIAL SCHOOLS are becoming more frequent, where collections of natural and manufactured objects, raw materials, tools, implements, and land, serve as the means of applying the foregoing facts and principles. Without this, indeed, the rest is barren theory. Until of late, the task of teaching the rural and domestic arts was not in the hands of any responsible parties. The vast majority of children can even now only glean desultory lessons about practical matters from persons, often unlettered, almost universally unaccustomed to the difficult art of teaching, and but too generally ignorant of first principles, however familiar they may be with rules of thumb.

The agricultural labourer, (as Mr. Vaughan says,) spends his life amongst the works of nature, possesses much manual skill, a quick sight, a faithful and exact memory, an observation by no means naturally inert; yet his knowledge has hardly any form or shape; and of the laws of the natural, and vegetable and mineral world, which he daily sees and handles, he is ignorant.

Able men are now beginning to relieve such of the burden of instructing. The Industrial School on the Earl of Lovelace's estate at Ockham is devoted to practical education. In the school-garden are reared all kinds of forest trees likely to prove serviceable in our woodlands. The erection of a shed bears witness to the

skill of the boys as bricklayers and carpenters. The courses of study at Lady Byron's school at Ealing, near Brentford, include gardening, the management of live-stock, shoe-mending, basket-making, carpentering, brick-laying, painting, and glazing. At the school of Broad-water, Worthing, the children's dinner during winter is provided for one-halfpenny each. It consists of a pint of boiled rice sweetened with treacle, and costs three farthings. The practice of cookery ought to enter into the education of every female that is likely to become personally responsible for the well-being of a home. The word school is, in fact, beginning to signify no longer an unfurnished room, but a *model-home*, where the faculties both of the souls and bodies of the children are simultaneously taught their earthly and eternal interests.

Such are the means of raising, not only the family of the female agriculturist, but those of the large mass of society. It is no longer possible, for men at least, to pass off accomplishments as education. If we neglect the arts of social civilization, we may be inflated with literary learning, and feel a satisfaction at our conventional refinements, but for all the broader purposes for which God created man, we shall soon be surpassed by the scholars of industrial schools.

F.

HYMN.

God of this fair creation!
In whom we live and move;
With hymns of adoration
We own that Thou art love;
Before Thine altar kneeling,
Thy gracious name we bless
For life, for health, for feeling,
For all earth's plenteousness.
For all that soothes our sorrows,
And gives our sickness ease,—
For corn that fills our furrows,
For fruit that bends our trees:
For wine, its balm diffusing
Through souls by pain oppress'd,
Which use as not abusing,—
O Lord, Thy name be blest.
May food which nature needeth
To us be daily given,
While still the spirit feedeth
On bread sent down from heaven.
From streams by drought unwasted,
May we those draughts obtain,
Which he who once hath tasted
Shall never thirst again.—MOULTREY.

THE nation that does not tax itself for the religious instruction of its poor, must be taxed many-fold for the punishment and repression of their crimes.

PANEGYRIC, when it has not an object of magnitude sufficient to fill the mind, is ever frigid and grovelling, because it is continually affecting the sublime, but has not materials to support it with dignity.—MILNER.

Our feelings are greatly influenced by our pursuits, and by those objects which engage our attention. The person who is continually in pursuit of opportunities for exercising the benevolent affections, either by conferring or acknowledging kindness, will overlook a thousand trifling causes of offence, which might have awakened resentment in the breast of another; while those in whom the selfish passions prevail, will be equally insensible to numberless instances of kindness, which would have filled the hearts of others with gratitude and joy; just as a person who is eager in the chase will disregard the beauties of the prospect which surrounds him, and know no more of the country through which he passed than if he had never seen it.—BOWDLER.